WHITE PAPER V 14

Kelio Integral
Kelio Optima
Kelio Protect
Kelio Security

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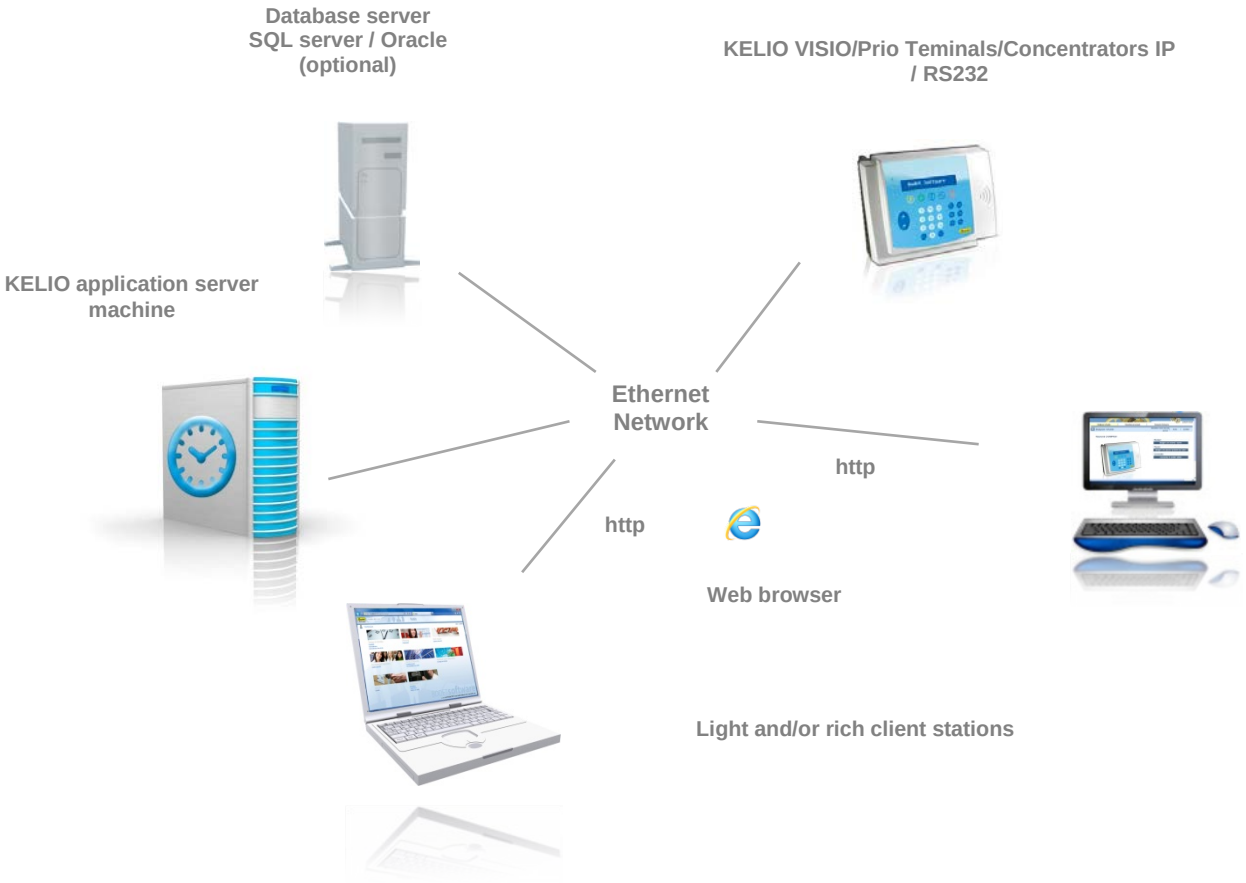
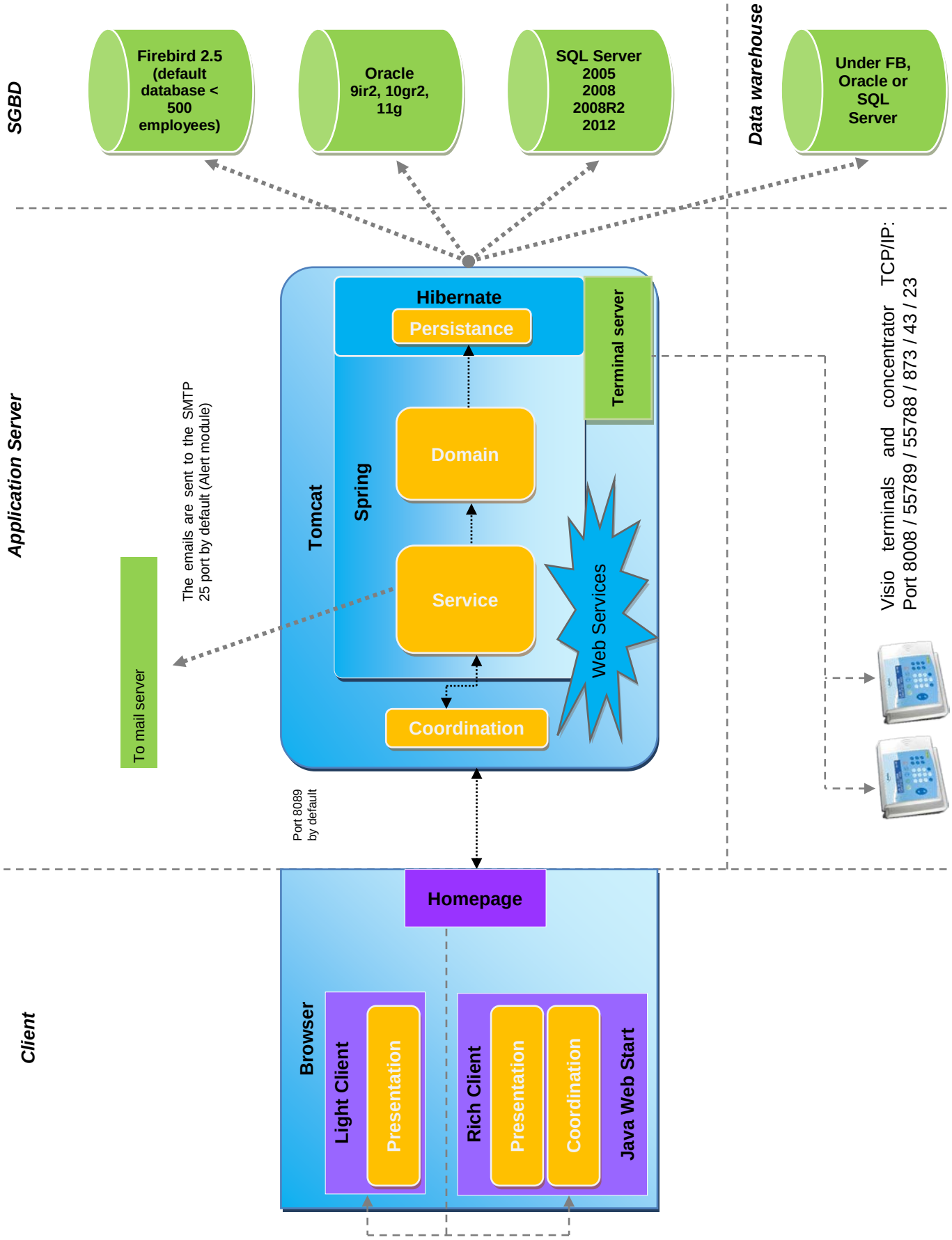
1. OVERVIEW

The objective of this document is to present the technical operation and the pre-requisites for installing Kelio in version 14.
The information gathered here should make it easier to prepare installations and enable the solution to be integrated better into your IT environment.
The technical recommendations made here may change without notice.

2. KELIO OPTIMA SYSTEM OVERVIEW DIAGRAM



3. DATA FLOW DIAGRAM



4. TERMINALS / CONCENTRATORS

4.1 Kelio Visio terminal

The terminals are intelligent hub elements used to collect clockings and view results. They are autonomous and exchange "streamlined" information with the application server. They operate through an on-board Linux OS (version 2.4.21 based on a Montavista distribution) and their application is entirely developed in JAVA language.

Communication mode with the server: **Ethernet TCP/IP, RS232** serial link, **modem**.

Power supply:

- 12 V or 240 V.
- In case of mains failure, the Visio terminal will work for 2 hours on battery.
  In case of prolonged mains failure, it is no longer possible to clock in or out, but the data contained in the terminal is saved for an unlimited duration.

  To increase the clocking time in case of mains failure, an external power supply unit, equipped with a high capacity battery, is available as an option.

Autonomous operation: In case of link failure with the server, the Kelio Visio terminal has a capacity to calculate and display results for 5 days. Beyond this the clockings continue to be saved up to a total of **50**,**000 clockings**.
If the Kelio Visio terminal manages remote slave readers or terminals on its 485 bus then this 50,000 clocking storage limit remains valid for all the clocking points managed.

TCP/IP ports: Ports required for communication between the application server and the terminals:

SERVERP Port	8008	Web maintenance http server of the terminal
SERVER Port	55789	Synchronisation server of the terminal data
SERVER Port	55788	pmonitor: remote control of sections (processes)
SERVER Port	873	Terminal standard ftp download protocol to update the on-board programme
SERVER Port	43	Port whois: verification of the concentrator's SID: It is used to associate the terminal with the application server in a unique manner on a network
SERVER Port	23	Port TELNET: remote maintenance of the terminal.

Reader technologies:

Magnetic:

- ⇨ ISO 2 Magnetic badge reader

(125 kHz; 13.56 MHz) proximity:

- ⇨ Badge reader without contact:
  - o 26 bit Wiegand STID proximity
  - o 26 bit Wiegand HID proximity
  - o Motorola proximity

- ⇨ I-class technology badge reader

- ⇨ MIFARE and LIFARE DESFire technology badge reader

Biometrics:

- ⇨ Biometric fingerprint reader + MIFARE

- ⇨ Biometric Fingerprint Reader
  - o *(In France, biometric fingerprint registration requires specific authorisation from the CNIL – French data protection authority)*

Internal relay: May be used to manage bell ringing or a door with controlled access.

External USB port (on Kelio Visio Activity model): Only usable to connect a barcode reader

4.2 Prio V2 Terminal

The PRIO V2 terminals operate:

- In permanent Ethernet connection, connected directly to a Kelio Visio master terminal, a unit concentrator or virtual concentrator (excluding Kelio On Demand solution).
  - 25 Prio terminals may be connected per master terminal or physical concentrator (Visio or Concentrator).
  - If the link is lost with the concentrator (degraded mode), the Prio terminals enable clockings to be saved up to a memory level of 10,000 clocking operations.
- in offline mode, downloading badge clock-ins using USB flash drive (non supplied). (This mode is not compatible with KELIO PRIO V2 Mifare versions.)
  - Clockings can be downloaded using USB flash drive. In this mode, the number of employees is limited to 100.

Notes: On systems that are sold for export, up to 4 Prio terminals may be connected directly to a virtual concentrator (excluding Kelio On Demand solution).

The most flash drives on the market are compatible with Kelio Prio.

The following USB flash drives have been tested on the product (this list is not exhaustive):

- *DANE-ELEC CAP LESS 2 GB*
- *DANE-ELEC CUBE MEMORY 512 MB*
- *DANE-ELEC ZMATE PEN NACRE 1 GB*
- *DANE-ELEC ZMATE PEN ZLIGHT 2 GB*
- *KINGSTON DATATRAVELER 512 MB*

The KELIO PRIO V2 application program as well as the firmware of the biometric module are updated using a USB flash drive.

Communication mode with the concentrator: **Ethernet TCP/IP** only

TCP/IP ports:

Port 49777	Communication port used with the concentrator (Visio, unit or virtual)
Port 21	Downloading the on-board programme
Port 23	Port Telnet: remote maintenance of the terminal

Reader technologies:

(125 kHz; 13.56 MHz) proximity:

- ⇨ Badge reader without contact:
  - o 26 bit Wiegand STID proximity
  - o 26 bit Wiegand HID proximity
- ⇨ MIFARE and LIFARE DESFire technology badge reader *(non compatible USB mode)*

Biometrics:

- ⇨ Biometric fingerprint reader + MIFARE and MIFARE DESFire *(non compatible USB mode)*
- ⇨ Biometric Fingerprint Reader
  - o *(In France, biometric fingerprint registration requires specific authorisation from the CNIL – French data protection authority)*

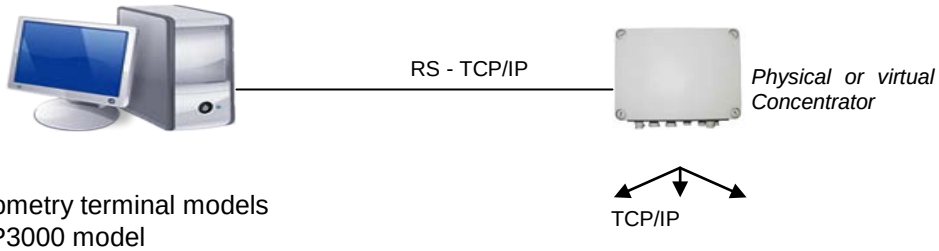
Internal relay:
May be used only to manage bell ringing.

Function keys:
PRIO terminals dispose of two adaptable function keys for:
consulting results, clocking a business leave, clocking a break, clocking without badge, clocking OTA, opening a door, clocking an activity, a cost centre, etc. (with Kelio Analytics/Analytics +).

4.3 Hand geometry terminal

The Kelio system may be fitted with hand geometry terminals. These terminals must be connected to a physical or virtual concentrator (excluding Kelio On Demand solution for the virtual concentrator).

In France, these terminals must no longer be used for time and attendance (CNIL withdraws its authorisation).



2 hand geometry terminal models

- HP3000 model
- HP1000 model

Communication mode with the concentrator: **Ethernet TCP/IP** only

Communication port used to the concentrator or Visio: 3001

Autonomous operation:
If the link is lost with the concentrator (degraded mode), the HP1000/3000 terminals enable clockings to be saved up to a memory level of 5,000 clocking operations.

Function keys:
The HP3000 terminals enable clocking and result consultation with 2 function keys. The HP1000 terminals have no function keys.

4.4 Terminal Characteristics Table

	KELIO VISIO	KELIO PRIO	HP 1000 / HP 3000
Max no of employees	Proximity/magnetic reader: 2000 Biometric reader 2000	Proximity/magnetic reader: 2000 Biometric reader 2000 Limited on 100 employees max in USB mode	HP 1000: 100 HP 3000: 500
Operation in degraded mode	Autonomous, schedules over 5 days	Clockings saved only	Clockings saved only
General power supply	12 V, 230 V	230 V	230 V by external power supply unit
Backup	Lithium battery	Lithium battery	Lithium battery
View type	2 rows of 24 characters	2 rows of 12 characters	2 rows of 16 characters
Communication mode	Ethernet, RS 232, Modem	Ethernet	Ethernet
Types of reader	Fingerprints HID 125 kHz, STID 125 kHz, Motorola 125 kHz, Mifare 13.56 MHz, I-Class 13.56 MHz, Legic 13.56 MHz, Magnetic	Fingerprints HID 125 kHz, STID 125 kHz, Mifare 13.56 MHz	Hand geometry
Time synchronisation	France Inter Antenna By the server	By the server	By the server
Internal relay	Yes (access, bell ringing)	Yes (bell ringing)	No
Clockings saved	50,000	10,000	5,000
Dry contact entries	Yes	No	No
Function keys	11	2	2 on HP 3000 None on HP 1000
Operating temperatures	0 °C à 50 °C	0 °C à 40 °C	0 °C à 40 °C -29°C to 49°C with Hurricane housing, with 24V supply for the heating resistor
IP index	IP 31	IP 31	IP 31 Exterior version with Hurricane housing
Dimensions/Weight	W: 220 mm H: 164.5 mm D: 93.6 mm Weight: 1.7 kg	W: 131 mm H: 189 mm D: 57 mm Weight: 0.7 kg	W: 223 mm H: 296 mm D: 217 mm Weight: 4 kg HP with Hurricane housing: W: 305 mm H: 375 mm D: 267 mm Weight: 8.3kg
Information that can be consulted	Balance Total of paid or actual hours Last In/Out clockings Absence and business leave balances Absence and business leave totals Overtime, special hours totals Bonus total (No function keys on HP 1000)		

5. OTHER HARDWARE PERIPHERALS

5.1 Barcode readers

From version V12, the Kelio system may be combined with the use of barcode readers.

Two barcode reader models are available.

Datalogic / Touch 65 USB line connected reader.
This reader must be connected by USB to a Visio terminal.

Datalogic /Gryphon GM4100 wireless reader
The reader's base (or interface cradle) must be connected by USB to a Visio or Prio terminal.

Communication between the reader and the base in Radio Frequency:

- Up to 30m in 433 MHz
- Up to 15m in 910 MHz

Charge time: 4h

5.2 Independent barcode reader

The Kelio system may be combined with independent barcode readers.

These barcode readers record activity clocking operations with time and date stamps and do so independently. The information stored in the readers is downloaded by connecting the readers by USB to a Kelio client PC.

	Independent barcode reader
Communication interface	USB
Backup	10000 activity clocking operations
Time synchronisation	RTC quartz internal clock (accuracy +/- 60 sec./month)+ synchronisation to Kelio server time on USB connection with the Kelio client PC.
Power supply	Lithium-Ion battery pack rechargeable during USB connection with the Kelio client PC (2.5 hrs' charging time, the LED turns green)
Operating temperatures	-10 - +40 °C
Dimensions/Weight	(W x H x D) 30 x 62 x 16 mm Weight: 28g

5.3 Zenius and Zenius Expert badge printers

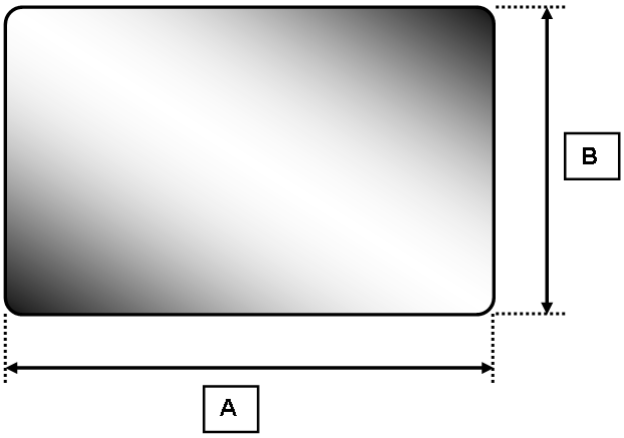
The Evolis Zenius or Zenius Expert printer enables colour screenprinting on badges in single-sided print mode.

5.3.1 Compatible badges

The badges that are compatible with the printer are in standard CR80 – ISO7810; the following dimensions are authorised:

Thickness	max	min
mm	0.76	0.25

Dimension	A		B	
	max	min	max	min
mm	85.72	85.47	54.03	53.92



1.1.1 Printing speed

Colour: 120 to 150 badges/hour
Black and white: 400 to 500 badges/hour

Charger capacity: 50 cards

1.1.2 Cleaning

The Evolis Zenius printer can print a maximum of 1000 badges between 2 cleaning cycles.

5.3.2 Design software

The eMedia Card Designer software must also be installed on the Kelio client PC to be able to create the screenprinting design to be applied.
The emedia card version must be 6.5 built 694.

The Kelio client station must have Framework.net 4.0 to be able to install the driver; if it does not the download is available.

The eMedia Card Designer application is compatible with the following operating systems:
- Windows XP
- Windows Vista
- Windows 7
- Windows 8

Zenius printer a Windows 8 compatible.

Caution! The use of the printer is not validated within a TSE/Citrix environment.

The eMedia Card Designer application is available in 8 languages (to be selected during installation)
- French
- English
- German
- Spanish
- Italian
- Portuguese
- Russian
- Japanese

5.3.3 Characteristics

	Zenius printer
Communication interface	Zenius: USB 1.1 (compatible 2.0) Zenius Expert: USB 1.1 (compatible 2.0) and IP connection
Power supply	Power supply module: 100-240 VAC, 50-60 Hz, 1.8 A
Environment	Min/max operating temperature: 15°/ 30° C (59°/ 86° F) Humidity: 20% to 65% without condensation Min/max storage temperature: -5°/ +70° C (23°/ 158° F) Storage humidity: 20% to 70% without condensation Ventilation in operation: open air
Dimensions/Weight	Dimensions (H x W x L): 195 x 205 x 310 mm Weight: 3.3 kg

5.4 Tattoo badge printers

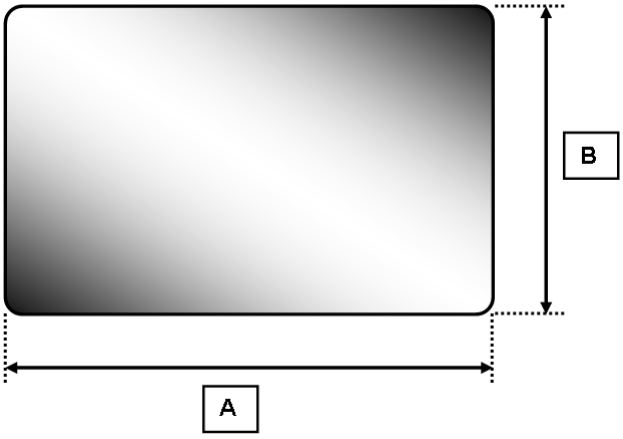
The Evolis Tattoo RW printer enables black screenprinting on badges in single-sided print mode.
As the ink pigments are contained in the badge, this printer does not have any ink cartridges.
You can have specific re-writeable proximity badges.

5.4.1 Compatible badges

The badges that are compatible with the printer are re-writeable badges in standard CR80 – ISO7810; the following dimensions are authorised:

Thickness	max	min
mm	0.76	0.5

Dimension	A		B	
	max	min	max	min
mm	85.72	85.47	54.03	53.92



5.4.2 Printing speed

12 seconds / card

Charger capacity: 100 cards

5.4.3 Design software

The eMedia Card Designer software must also be installed on the Kelio client PC to be able to create the screenprinting design to be applied.
The emedia card version must be 6.5 built 694.

The Kelio client station must have Framework.net 4.0 to be able to install the driver; if it does not the download is available.

The eMedia Card Designer application is compatible with the following operating systems:
- Windows XP
- Windows Vista
- Windows 7
- Windows 8

At the moment, the Tattoo Rewrite printer disposes of a Windows 8 beta version driver non supported by Evolis.
Caution! The use of the printer is not validated within a TSE/Citrix environment.

The eMedia Card Designer application is available in 8 languages (to be selected during installation)
- French
- English
- German
- Spanish
- Italian
- Portuguese
- Russian
- Japanese

5.4.4 Characteristics

	Tattoo printer
Communication interface	USB 1.1 (compatible 2.0) and IP connection
Power supply	Power supply module: 100-240 VAC, 50-60 Hz, 1.8 A
Environment	Min/max operating temperature: 15°/ 30° C (59°/ 86° F) Humidity: 20% to 65% without condensation Min/max storage temperature: -5°/ +70° C (23°/ 158° F) Storage humidity: 20% to 70% without condensation Ventilation in operation: open air
Dimensions/Weight	Without the receptacle: 166 mm (H) x 290 mm (L) x 187 mm (D) With the receptacle: 166 mm (H) x 368 mm (L) x 187 mm (D) Weight: 2.4 kg

5.5 USB badge readers

From version 10.2, a USB table reader can now be used to carry out different operations:

- The "Last read" function.
- From Administration or Access control, the badge number can be added directly from the T&A file.
- Enrolment from a client station.
- From Administration or Access control, the employee's fingerprint can be saved directly, either in the base or on the badge.
- Identification on the Kelio portal

If a TCL 17 consultation / clocking touch terminal is used, a proximity reader can be used to enable an automatic Intranet session to be opened with the badges.

There are 4 USB reader models:

HID
HID 5325 CL

STID
STR-W15A

Mifare (read & write)
Omnikey 5321 V2

Biometric
Suprema Biomini SUP-SFR400

The use of these readers is not validated on TSE client stations; they must be used on a full Kelio client station and not a TSE terminal or session.

6. KELIO APPLICATION SERVER MACHINE

6.1 Technology

The Kelio Optima software operates on a TOMCAT type JAVA application server (Apache) + SPRING. It acts as an application server as well as a web server.
TOMCAT version used: 6.0.29.2
Caution: The Kelio system deploys its own TOMCAT server. It cannot cohabit with another TOMCAT server on the same machine. The server must be dedicated.

All application parts as well as the computer are entirely developed in Java language.
The Hibernate framework is used to access the persistence (database).

The application server is multi-thread in order to use multi-core processor technologies.

6.2 Configuration

The Kelio system may be installed on a PC, Professional Server, Blade server or virtualised machine.

The Kelio software (server) must have the following dedicated resources:

Licence	No. of rich users	RAM	CPU Kelio Server	Kelio Server disk space.	Size of the Oracle DB/SQL server	DB Server CPU
50p	2	**1GB**	2 CPU	4GB	N/A	N/A
150p	5	**1.5GB**	2 CPU	4GB	N/A	N/A
250p	10	**1.5GB** /!\ 32-bit OS limited in RAM Tomcat limited to 1.2GB on a 32-bit OS	3 CPU	4GB	N/A	N/A
500p	15	**2Go** /!\ 32-bit OS limited in RAM Tomcat limited to 1.2GB on a 32-bit OS	3 CPU	4GB	10GB	2 CPU
1000p	25	**2.5Go** /!\ 32-bit OS limited in RAM Tomcat limited to 1.2GB on a 32-bit OS	4 CPU	4GB	10GB	3 CPU

Note: these values do not take the OS requirements into account

Consult us for Kelio configurations > 1000 people

The machine server, as well as the database, if proprietary, must be available 24 hours a day.

Antivirus: If an antivirus programme is running on the server station, it is important that the C:\Program Files\BODET installation directory be excluded from the controlled directories. Caution, the Kelio solution is not yet compatible with Bit Defender 2012/2013.

Use of the hot backup system: When Kelio is used with the default Firebird database, hot backup systems such as "Symantec Backup" or equivalent are incompatible. They must all be deactivated for the “\BODET\open\database” directory

6.3 Compatible operating systems

- Microsoft Windows 2000 Professional / Server
- Microsoft XP Home / Professional 32 or 64 bits
- Microsoft 2003/2003R2 SE / EE 32 or 64 bits
- Microsoft 2008 Server 32 or 64 bits
- Microsoft 2008 R2 64 bits
- Microsoft Vista 32 or 64 bits
- Microsoft 7 Seven 32 or 64 bits
- Microsoft 8, 8 Pro and 8 Enterprise 32 or 64 bits (non compatible Win 8 RT)
- Microsoft 2012 Server
- Compatible with TSE and Citrix technologies

6.4 Compatibility with 64 bit Windows operating systems

By default, the Kelio application server is deployed on 32 bits.
When using a 64-bit pc and OS, you can deploy Kelio on a 64-bit.

In 32-bit OS
Installation only in 32-bit and Tomcat memory limit = 1.2 GB

In 64-bit OS
Possible to do a 32-bit installation (if total RAM ≤ 4 GB) and Tomcat memory limit = 1.49 GB
Possible to do a 64-bit installation (if total RAM ≤ 4 GB) and Tomcat memory limit = RAM limit for the machine

For installations with heavy loads, the use of a 64-bit platform is recommended. This is recommended for all the installations with more than 500 employees.

6.5 Jvm version installed on the server

For 32-bit installation

Java version "1.6.0_35"
Java(TM) SE Runtime Environment (build 1.6.0_35-b10)
Java HotSpot(TM) Client VM (build 20.10-b01, mixed mode)

For 64-bit installation

Java version "1.6.0_35"
Java(TM) SE Runtime Environment (build 1.6.0_35-b10)
Java HotSpot(TM) 64-Bit Server VM (build 20.10-b01, mixed mode)

6.6 The TCP/IP ports used

- Port 8089 http browser (rich client and intranet use)
- Port 443 https browser (rich client and Intranet use in secured mode)

These ports can be configured at the time of installation.

6.7 Virtualisation

The Kelio application server is compatible with the virtualisation server technologies.

There are numerous virtualisation solutions available on the market: VMware, HYPER-V, XenServer, etc.
These solutions are Kelio compatible in that they can virtualise one of the compatible operating systems (see the list of compatibilities chapter: Compatible operating systems)

6.8 Software licences and protection

The KELIO software is protected by copyright law. Therefore, Bodet Software includes a system in its applications to protect against illegal copying or usage of its solution.
A physical (USB) or virtual protection key (if the server is virtual), with a unique identifier, is provided to each customer who has a Bodet licence. This key must be present for the solution to operate.

7. DATABASE

7.1 Choosing between a default database or proprietary database use

Employee capacity:

For a Kelio solution that manages **up to 500 active employees** with data logged over **18 months,** the Firebird default database is sufficient.

For a Kelio solution that manages **over 500 employees**, an SQL Server or Oracle type database must be considered.

Number of users:

For a Kelio solution where **fewer than 15 users** using rich clients may connect at the same time, the Firebird default database is sufficient.

For a Kelio solution where **over 15 users** using rich clients may connect, an SQL Server or Oracle type database must be considered.

Data logging mechanism

Two data logging mechanism configurations are available with the Kelio V14 solution:

Kelio V14 solution data logging over 18 rolling months: configuration compulsory for a Kelio solution that uses the Firebird default database.

Kelio V14 solution data logging up to 10 rolling years: configuration that may only be put in place if the Kelio solution is used with an SQL Server or Oracle database with 500 people.

7.2 Default Database: FIREBIRD®

The Kelio system is deployed in the standard version with a **FIREBIRD** type database
Kelio runs Firebird version 2.5.1.26351

7.3 Proprietary database

In France, a Kelio installation on a proprietary database is only possible within the Kelio Optima range.

The proprietary databases compatible with KELIO OPTIMA are:

Microsoft SQL server 2005, 2008, 2008R2, 2012 except "Express" versions
Oracle Database version 9ir2, 10gr2 or 11g except "Express" or "Personal" versions

The use of this type of database means that the customer must respect the administration advice given by Bodet Software to ensure that the system operates correctly. In the same way, Bodet Software cannot be held responsible for any read/write operations carried out directly in the database by the customer.

The database server cannot be deployed on the same physical machine as the KELIO OPTIMA application server.

7.3.1 Microsoft SQL SERVER DBMS

Compatibility:

Kelio Optima is compatible with the following versions and editions of Microsoft SQL server:

- **SQL server 2005[1], 2008, 2008R2, 2012**
  - Standard Edition
  - Entreprise EditionWorkgroup Edition

Not compatible with:

- *The Express Edition 2005 and 2008 free versions as the administration tool is optional and the database size is limited.*
- *The Developer Edition version as it can be used only in a development context (licence)*
- *SQL Server Mobile Edition version as it is intended for mobile application development*

Licence mode:

- **Processor:** In this licence mode, it is necessary to acquire a licence for each physical processor executing the SQL server system. (1processor = single or multi-core) The number of users is then unlimited.
  This licence mode is "legally" suited to the operation of a Kelio Optima system.

- **SERVER licence mode + client access licence (CAL) per User:**
  According to Microsoft, with this licence mode, a person who operates SQL server is regarded as a user. Therefore, all employees who clock in or out and who use the software or the personal workspace are users. This licence mode is not economically profitable and thus strongly discouraged for operating a Kelio Optima system.

- **SERVER licence mode + client access licence (CAL) per Station (device):**
  According to Microsoft, with this licence mode, any machine that operates SQL server is regarded as a Station. Therefore, a CAL is counted per operator station, per physical clock installed. This licence mode is economically profitable for up to 25 CAL. Beyond this the processor licence mode must be favoured. This licence mode is suited for operating a Kelio Optima system not using the Employee Self-Service functionality and having a number of users and clocks less than 25.

Characteristics of the instance hosting the Bodet database:

- The instance must be visible from the Kelio Optima application server station.
- The mixed authentication mode is mandatory.
- The TCP/IP port for the SQL Server platform must be activated and set.
- The licence formalities will have to meet Microsoft's recommendations.

[1] For optimum operation **SQL2005 Service Pack 2** must be installed. (It enables the Snapshot application needed by the Kelio application to be taken into account).

Deployment of the database

The SQL server administrator will have to carry out the following operations:

- Create a new connection (Login) on the selected instance.
- Action to be carried out with the SA account
    - Create a connection (login) with the NAME: "bodet"
    - Password: (can be personalised)
    - This connection must have the dbcreator roles.
    - There must not be any password expiry or renewal for this connection.

- The physical database model must be created by activating the sql scripts provided by Bodet Software during installation

Administration

- The administration choices required for processing the Kelio Optima database are the administrator's responsibility. However, we recommend that the following administration tasks be provided for:
    - Backups
    - Initialisation of the transaction file (truncation of the log)
    - Packing
    - Re-indexing.

=> An administration recommendation sheet will be handed over during installation by the Bodet Software technician.

Sizing machine We recommend that the SQL server has the following resources:	*Processor:* dual-core 3 GHz *Hard disk:* 7,200 rpm or **10,000 rpm** *RAM:* 2 GB
Sizing Base Disk space required by employee:	*10 MB / employee managed* *(Maximum value obtained in the context where all Kelio options are used with 18 months' history).*

7.3.2 Oracle® DBMS

Compatibility:

Kelio Optima is compatible with the following versions of Oracle® Database:

- **Oracle DATABASE 10g release 2 and 11g**
    - Oracle Enterprise Edition
    - Oracle Standard Edition
    - Oracle Standard Edition One

  Not compatible with:
    - *The Express Edition version*

- **Oracle DATABASE 9i release 2**
    - Oracle Enterprise Edition
    - Oracle Standard Edition

  Not compatible with:
    - *The Express Edition version*

Licence mode:

- **Processor:** With this licence mode, it is necessary to acquire a licence for each physical processor executing the Oracle system. (1processor = single or multi-core)
  It is legally suited to the operation of a Kelio Optima system.

- **Mode per authorised user:** As per Oracle, an authorised user is a person who uses a programme or a process which requires the Oracle database. As a result, any employee who clocks, who uses the software or the personal workspace is a user. This licence mode is not economically profitable and thus not adapted for operating a Kelio Optima system.

Deployment of the database

- Name of the database to be created: OPENDB

- We recommend a deployment in two TABLESPACES:
  1st TABLESPACE designed for data: OPENDATA OPENDATA
  2nd TABLESPACE designed for indexes: OPENIDX OPENIDX

- We recommend that these two Tablespaces be deployed on different physical hard disks.
- Initial size of each Tablespace: 1 GB (mini)
  Max size: unlimited, if possible
  Autoextend: 256 MB
- Creating a user :
  Login = bodet
  Password = will be provided by the technician during installation
  Roles = Connect, Resource, exp_full_database, imp_full_database
  System privileges = unlimited_tablespace
  Default Tablespace = OPENDATA

- Listener must accept the TCP/IP protocol and will be required for installing the Kelio Optima server

- SGA / PGA memory capacity: to be optimised by the Oracle administrator

- Number of processes: The Kelio application can open 500 connexions to the Oracle server as a maximum. By default, the the maximum number of processes is about 150 on Oracle. The Oracle client administrator may increase this value to 500.

- The physical database model must be created by activating the sql scripts provided by Bodet Software during installation

Administration

We recommend a daily backup on backup units with low fault tolerance
The ORACLE database administrator (DBA) is responsible for the Kelio Optima database maintenance plan. He remains the master of his maintenance plan and the only one responsible for backing up and restoring.

Sizing machine We recommend that the ORACLE server has the following resources:	*Processor:* dual-core 3 GHz *Hard disk:* 7,200 rpm or **10,000 rpm** *RAM:* 2 GB
Sizing Base Disk space required by employee:	*7 MB / employee managed* *(Maximum value obtained in the context where all Kelio options are used with 18 months' history).*

8. CLIENT WORKSTATIONS

We recommend using Kelio applications on minimum 17" screens with a graphical resolution of 1024x768. Large font type displays are not managed. Optimum operation is obtained with 96 ppp resolution.

The client stations access the application server through a web browser.

2 TYPES OF CLIENT MODULES ARE THEN ACCESSIBLE:

8.1 "Thin client" modules

- Personal workspace (Virtual clocking, viewing results, absence requests, monitoring of group results, ...)
- Technical supervision module

These modules are created with Html and Javascript pages and do not require any deployment or plug in. Access is by default possible from the 8089 port: It can be modified at the time of installation.

The browsers that are compatible for the "thin clients" are:

- Internet Explorer from version 6
- Firefox from version 3.5
- Chrome from version 12
- Safari from version 5
- Opera from version 11

8.2 "Rich client" modules

- HR Administration (Operating module)
- Kelio Setup (Setup module)
- Access control (Kelio Protect - Security)
- Planning
- Kelio Data Exchange (Import/export management, Warehouse synchronisation management)
- Rights administrator (management of software access rights)
- Calculation rules
- Kelio Installation (Installation module reserved for Bodet Software technicians)

These modules require the deployment of a Java Web Start® client. This deployment is entirely automated. The security configuration of the browser must therefore allow this Java Web Start® client to be downloaded and installed.

Minimum configuration	Recommended configuration
Processor frequency 1.5 GHz RAM capacity - 1 GB Disc space - 400MB Disc space - 400MB	Processor frequency 3 GHz total (Multi-core) RAM capacity - 2 GB RAM Disc space - 400MB

8.3 JVM for the client stations

By default, processing the Kelio solution via "rich client" modules requires the use of a JVM 1.6 update 35.

When launching "rich client" modules, the presence of version JVM 1.6 update 3 is checked. In case there is no JVM or an inferior JVM, the automatic download of version JVM 1.6 update 35, which is stored on the Kelio server, begins.

However, defeating this control in the Kelio Supervision module is possible by forcing the use of version JVM 1.6 update 21 as a minimum.

8.4 Accessing the Kelio server through a proxy

Bodet Software recommends not to filter the URL for accessing the Kelio server on the proxy device installed on the customers network.

However, the Kelio client solution recognises a proxy authentication demand to the Kelio application server.

8.5 Use of client stations in HTTPS mode

To operate the system in secured mode, the Kelio client applications can be used in HTTPS mode. The TCP/IP port used by default for HTTPS management is 443.

HTTPS may operate with:
- Self-signed certificate
- An SSL certification signed by a certification authority (at the customer's expense).

To obtain an SSL certificate, you must first generate a certificate then make a signature request to a certification authority (CA).

8.5.1 Generating a certificate

The customer should generate a certificate (.CSR) including the following information:

Information	Details/example
Common Name	FQDN[2] which customers will use to reach the server E.g. ‘client.bodet-software.com
Name of your organisation unit	Department / company name
Name of your organisation	Company name
City of residence	E.g. CHOLET
State or province	E.g. France Pays de Loire
The two-letter country code for this unit	E.g. FR
Keystore password	Your choice
Certificate password:	Your choice

The customer then asks for it to be signed.

[2] FQDN: full qualified domain name

8.5.2 Signature of the certificate by a Certification Authority (CA)

Once the certificate has been generated, you must request its signature by a certification authority (Trusted CA). To obtain a signature, you must make an official request (most often via the CA's website).

The annual indicative cost of a Standard SSL certificate is between 200 and 400 Euro. This price varies according to the range of the version required and the required validity periods.

8.5.3 Official CA

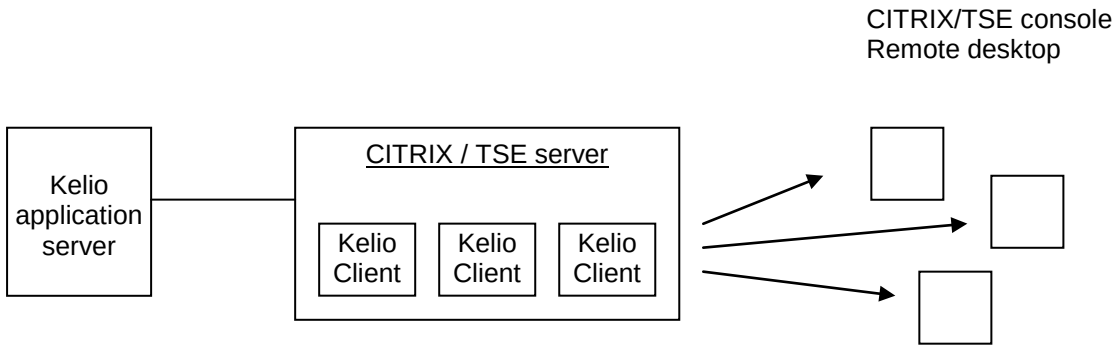
There are several certification authorities that deliver SSL certificates; here are a few of them, with their SSL certificate product purchase page.

CA	SSL Product Page
Verisign	http://www.verisign.com/ssl/index.html
Thawte	https://www.tbs-internet.com/php/HTML/commande.php?f=31
Keynectis	http://www.keynectis.com/3_protec_authentweb.html
Entrust.net	http://www.entrust.net/ssl-certificates/standard.htm
Certinomis	http://www.certinomis.com/ssl/index.php
Verizon Business	http://www.verizonbusiness.com/Products/security/identity/ssl/
GeoTrust	http://www.geotrusteurope.com/fr/certificat-ssl/index.htm

Once obtained, the signed certificate will be installed on the Kelio server by the Bodet Software technician.

8.6 TSE / CITRIX Technology

8.6.1 Schematic diagram



8.6.2 Memory consumption of client modules for sizing Citrix

Memory consumption of client modules:

Planning module: initial memory consumption for 1 client using the planning module 0.09 GB with maximum allocation of 0.25 GB
Administration/Setup module: 0.04 GB / module

Access control, User rights, Data exchange, Calculation rules and Installation module: 0.07 GB / module

8.6.3 Manual client station deployment

When installing under Citrix, it is possible to use Kelio client applications in three ways:

- Virtual desktop published for every user and Kelio client applications installed on the Citrix server(s) under each user profile.
  In this case, it is advisable to provide for sufficient disk space on the Citrix servers[3] which is proportional to the number of Kelio application users. The deployment and update of the applications is then managed automatically.

- Kelio Client applications installed directly on the client workstation for each user or shared on a file server.
  In this case, the disk space needed on the Citrix server(s) is minimal.
  Any Kelio module can directly be published in Citrix without desktop publication.
  On the other hand, deployment and updates have to be carried out manually using a .zip file provided by Bodet Software with each version of the software.

- Virtual desktop published for every user and Kelio Client applications installed directly on the client workstation for each user or shared on a file server.
  In this case, the disk space needed on the Citrix server(s) is minimal.
  All Kelio modules can be accessed via the Kelio portal.
  On the other hand, deployment and updates have to be carried out manually using a .zip file provided by Bodet Software with each version of the software.

A zip file containing all of the elements needed for this type of deployment may be generated from the Bodet “supervision” module.

[3] See volumetric analysis by client workstation

9. INFORMATION ON THE SYSTEM VOLUME

9.1 Volume of the KELIO application server

The program deployed on the KELIO application server uses 1 GB disk space (apart from data base[4]).
By default, the program is deployed under C:\Program Files\BODET.
The directory is customizable during installation.

9.2 Volume of clients:

The seize of installed files for:

- Administration, Setup and Planning module: 50 MB
- Installation, Access control, User rights, Data exchange, Calculation rules modules: 40 MB
- JVM: 90 MB
- Documentation (pdf): 10 MB

The modules are only deployed when they are used.

In case of an automatic deployment on the client PC, the files are installed under: %appdata%\bodet_client.
With manual deployment, the path may be configured but is identical for all users.

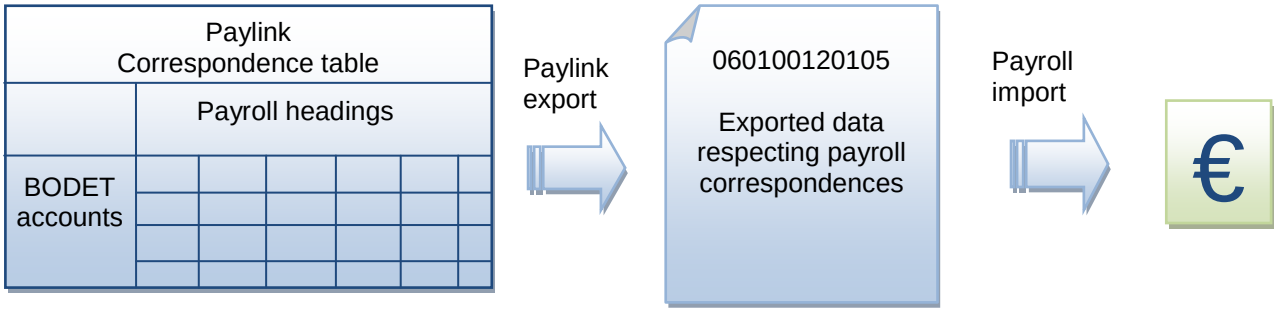
9.3 Volume of network exchanges between concentrator terminals and the server

- Weight of a clocking: 1.07 kB
- The weight of a complete data update between server and concentrator for 2000 employees: 1.7 MB
- The weight of a software update in the terminal: 3.2 MB

[4] See chapter "Data base" for data base volumes.

10. PAYROLL INTERFACE: KELIO PAYLINK

Paylink transfers the time and attendance data into ASCII files directly in your payroll software. Paylink interface manages the headings' correspondences between Kelio/ and your payroll system. The generated ASCII file respects the import formats which are demanded by all payroll editors on the market. (More the 100 referenced editors)



ASCII file respecting your payroll editor's import format.

The payroll software used must have an "Import" function. Several payroll editors offer this function as an option.

Kelio Paylink is a multi payroll interface, which manages different correspondence tables for every payroll software used in your company.

Vice versa, if you manage several companies with the same payroll software, it is possible to treat the correspondence tables of each company. This means easy management of different collective agreements between companies belonging to the same group.

The ASCII files provided by Paylink can be generated:

- in a local directory of your server
- in a mapped disk on your network

For easily putting the file at your users disposal it can be automatically sent by mail to the addressee of your choice or transferred to a ftp server.

The payroll export at the end of month is an important operation for the Kelio server:

The time needed for the creation of the file depends on the number of employees and the amount of transferred variable elements. In average, creation temps is less than 10 minutes.
During a transfer operation into the payroll system, the Kelio system remains available for all users. The employees and users can continue the use of Kelio transparently.
In order to guarantee this high level of availability on more the 1000 employees systems, we recommend to provide for Paylink 512 MB extra RAM to the Bodet application server configuration.

11. MAIL SERVER INTERFACE

The application "Alerts management" enables to send by email some alarms or anomalies to identified users.

By default, the messages are sent to the SMTP 25 port. (The port No. can be modified).

Kelio solution offers two more options for sending emails to a mail server:

Kelio enables alert emails to be secured by managing email account identification. This authentication management is based on the use of the SMTP-Auth protocol.

Kelio enables more secure alert mail exchanges by using an additional security layer of SSL/TLS (port 465) or STARTLS (port 587) type.

12. SMS SERVICE INTERFACE

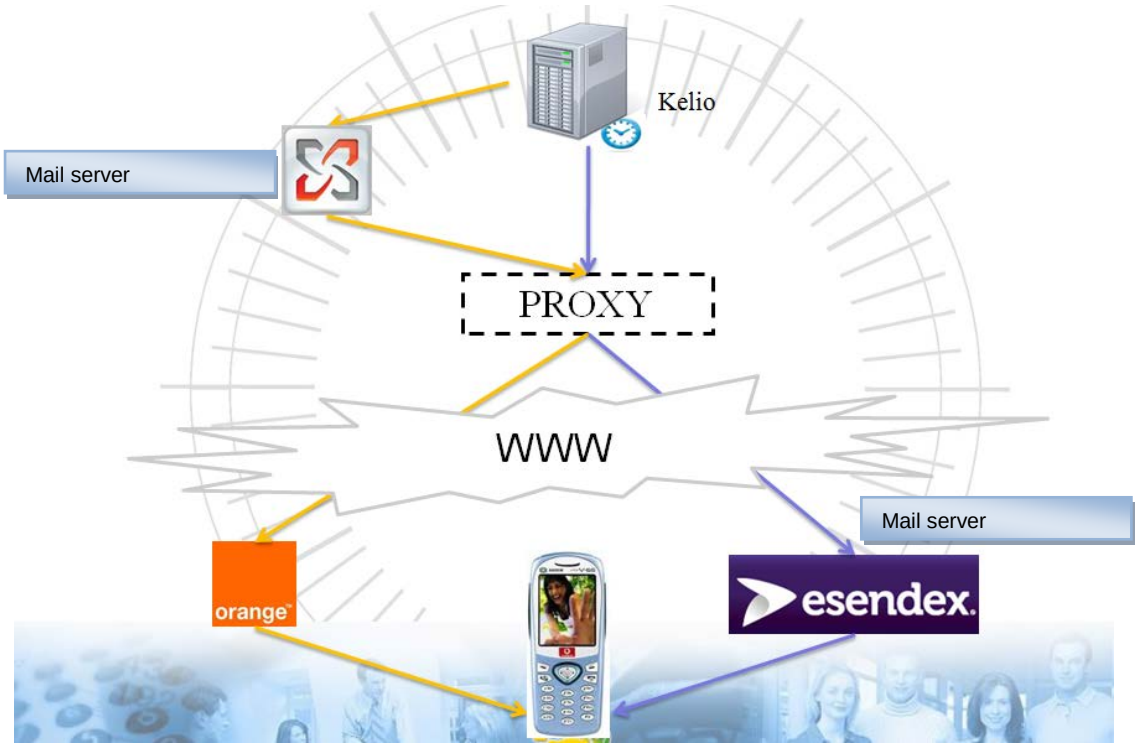
The Kelio solution enables to send by SMS some alarms or information to identified users.

This function is carried out by a Kelio generated email which is sent to a test message service. The email is sent to an address as follows:

phone_number@provider_domain_name

Two services for sending text messages are referenced by Bodet Software: Orange and Esendex.

Customers who are interested in this function need a subscription with one of the providers above.



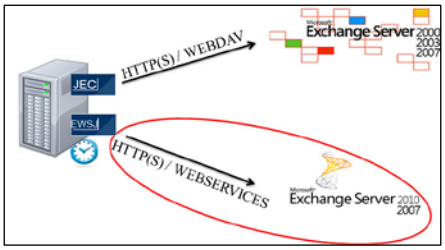
13. KELIO – EXCHANGE INTERFACE TO SYNCHRONIZE ABSENCES IN THE OUTLOOK CALENDARS

You can interface the Kelio system with one or more Exchange servers. This lets you display each employee's absence periods in the Outlook calendars as appointments.
The interfacing is executed by automatic function at a frequency that can be configured. The interfacing is uni-directional in the Kelio to Microsoft Exchange direction.
The interfacing can be secured in HTTPS mode.

It is compatible with **Exchange 2000, 2003, 2007 and 2010** servers.

Depending on the Exchange Server version used, 2 interface technologies are available:

- **JEC / WEBDAV: for 2003 and 2007 Exchange Server**
- **EWS / WEBSERVICES: for 2007 and 2010 Exchange Server**



With JEC / WEBDAV technology, the exchange protocol may be HTTP or HTTPS. If the authentication mode used is based on forms, then the HTTPS communication will be used automatically.

To commission this interface technology, the customer must provide the Bodet Software technician with the following information for each Exchange server:

- Http(s) address, Port and Context of the Exchange server
  - http(s)://<server>:port/context
- Domain name where the Exchange server is installed.
- Name of the calendar access file
- Name of the waste basket access file
- Login and password of an Exchange user account with write authorisation ("Main editor" right) on employees' Outlook calendars.
- List of Outlook user accounts for each employee.
- Use in HTTPS mode: SSL certificate signed by a certification authority

With EWS /WEB SERVICES technology, the EWS feature must be activated on the Exchange server as well as basic authentication.

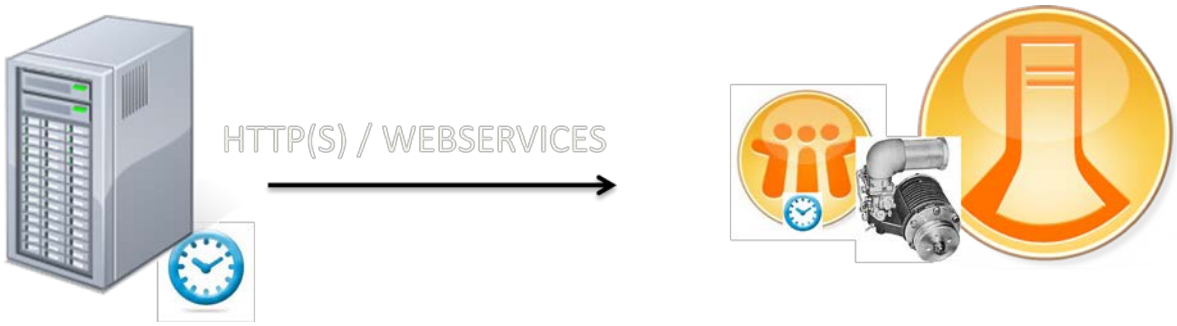
To commission this interface technology, the customer must provide the Bodet Software technician with the following information for each Exchange server:

- Http address and Port for the Exchange server
  - http(s)://<server>:port/
- Login and password for an Exchange account with mailbox on the system (a single user is not sufficient)
- List of Outlook user accounts for each employee.
- Use in HTTPS mode: SSL certificate signed by a certification authority

In case of an architecture with a Front-End server synchronise with Back-End servers. The Front-End server does not host any user or folder but redirects requests to the appropriate main server.

An installation service time must be provided for commissioning.

14. KELIO – LOTUS DOMINO INTERFACE TO SYNCHRONISE ABSENCES IN THE LOTUS CALENDARS



The Kelio system may be interfaced with a Domino server. This lets you display each employee's absence periods in the Lotus Notes calendars as appointments.

The interfacing is executed by automatic function at a frequency that can be configured.

The interfacing is uni-directional in the Kelio to Domino direction.

This interfacing is compatible with **Domino servers from V8.5.2**

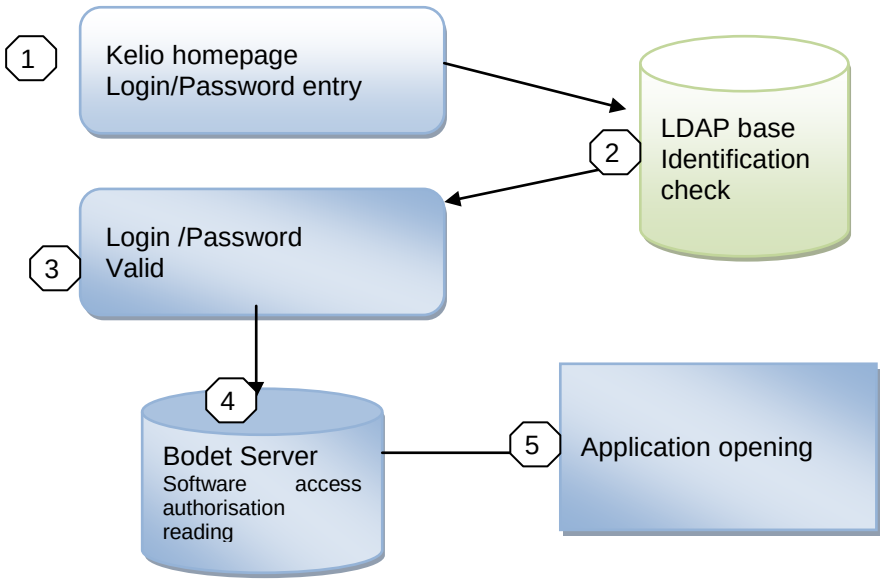
The Kelio interface with a Domino server will require:

- The deployment of a webservice on the Domino server. This webservice must be signed by the Domino administrator.
- The creation of a Domino user who will have authorisation to write in each employee's agenda

15. INTERFACE WITH LDAP

The Kelio system may interface with an "LDAP" directory type database so that the identification and security checks (login and password) for access to the application are centralised.

Schematic diagram:



An installation service time must be provided for commissioning.
Interface with Active Directory

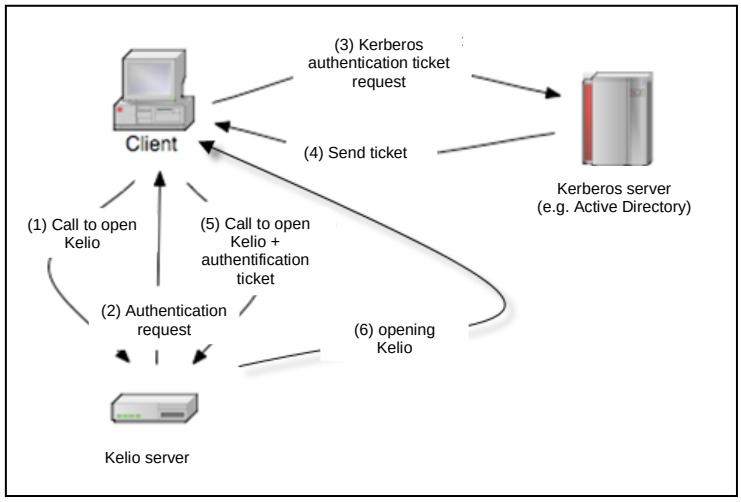
The Kelio system may interface with the Microsoft Active Directory in LDAP mode using the KERBEROS protocol.

CAUTION: *The use of the NTLM protocol is no longer supported from Kelio version 10.2.*

In LDAP mode, the Active directory database is used as a standard LDAP database. The operating principle is therefore identical to the one above.

In KERBEROS mode, the identification and security checks (login and password) for accessing the application depend on the Windows sessions opened. This solution allows a Windows session to be opened to authorise access to the Kelio application without re-entering IDs and passwords.

Schematic diagram:



In order to put Active Directory authentication into operation via Kerberos, the system administrator must:

- Create a user in Active Directory
- Generate a keytab file with the ktpass tool using the following command:

```
ktpass /out keliohttp.keytab /princ HTTP/myserver.mydomain.com@MYDOMAIN.COM
/mapuser keliohttp@MYDOMAIN.COM /ptype KRB5_NT_PRINCIPAL /crypto RC4-HMAC-
NT /pass +rndPass
```

A Bodet Software technician will carry out the configuration of the Kelio application for Kerberos:

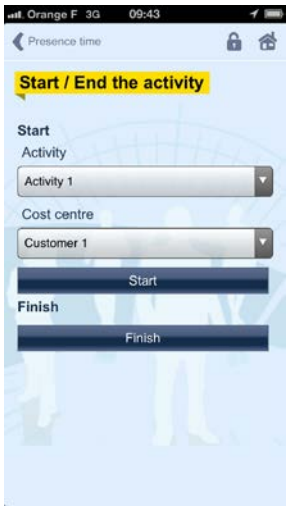
- copy of the keytab file on the Kelio server
- configuring the Kerberos authentication settings in the Kelio server supervisor.

NOTE:
From Kelio V10.2, the KERBEROS interface is compatible with use in Citrix environments.

Time for installation service must be allowed for when making any deployment of an Active Directory authentication.

16. KELIO MOBILE

With the Kelio Mobile module it is now possible to use the virtual clock functionalities, to enter/validate absence requests and to consult results on a smartphone, from screens that are specially adapted to the ergonomics of this type of hardware.



Kelio Mobile may be configured to dialogue with a smartphone in http or https (signed or self-signed).

The connection URL is the following type: http://URLkelio:8089/open/mobile

As soon as Kelio Mobile is activated on the Kelio server, a QR code appears on the Kelio portal. This QR code may be used from any smartphone thanks to a recognition application which will redirect automatically to the Kelio mobile page:

Orange F 3G 09:59
Presence time
Start/End performed
Your start/end was performed on 18/01/2013 at 09:59.
Analysis/Customer 5 in progress.
Geolocation successful, view the position

Kelio Mobile is compatible with all smartphones that are able to connect to a website.

If the smartphone is equipped with a GPS chip and is configured to send location information to a website, the time or activity entry may be geolocated.

Orange F 3G 09:56
Entry/Exit taken into account
Your In has been taken into account on 18/01/2013 at 09:56.
View the balance
Map
Satellite

17. KELIO DATA

Kelio Data is an optional module in the Kelio Optima range which enables a data warehouse (DATAMART) to be used for decision-making purposes.

The data warehouse is a database that may be deployed on a server such as:

- Firebird
- SQL server 2005, 2008, 2008 R2, 2012
- Oracle 9i or 10g

By default, installation is planned under Firebird but the choice is open until the system is installed.

Depending on their processing and logging requirements, the customer will define with the Bodet Software technician:

- The data they want to synchronise in their warehouse.
- The refresh frequency for this data.
- The data logging duration before clearing.

Once these parameters have been selected, one or more automatic functions will fill the warehouse tables and then make the data available for decision-making operational purposes. Thus, data can be used from the Excel or SQL request or from available decision-making reporting tools (Business Objects®, Harry Software®, Cognos®, etc.).
Documentation that describes the structure of the tables in the warehouse is provided for the customer to start using it.

The customer accesses, consults and processes the data in the warehouse.

18. WEB SERVICES: METHODS FOR USING THE WEB SERVICES PROVIDED WITH THE KELIO APPLICATION

Bodet Software has developed a range of Web Services for the Kelio application and makes them available to its customers. These Web Services are powerful development tools that enable Kelio applications to be integrated into a seamless information system.
Bodet Software recommends that its customers take note of the information below if they want their own technical departments or external service providers to use Web Services and that they ensure that they have the skills they need to carry out these operations.

18.1 Pre-requisites for using Web Services

The customer or their service provider must be able to program "SOAP" type Web Services.
Bodet Software provides a Web Services library, but is not able to provide assistance for the electronic developments made by its customers or their service providers.

18.2 Web Service definition

A Web Service is an electronic program that enables communication and data exchange between applications and seamless systems in distributed environments. Therefore, it is a set of functionalities available over the Internet or an Employee Self-Service module by and for applications and machines, without human intervention and in real time.

The Web Services represent a communications mechanism between remote applications through the Internet network independent of any programming languages and execution platforms:

- using the HTTP protocol as a method of transport. So, the communications are carried out on an universal, controlled support which is generally not filtered by firewalls.
- Using a syntax based on XML notation to describe the calls to remote functions and data exchanged.
- Organising call and response mechanisms.

Thanks to the Web Services, the applications may be seen as a set of business services, structured and correctly described, that interact according to an international standard rather than a set of mixed objects and methods.

The first benefit of this breakdown is the ease in maintaining the application and the interoperability that enables a component (a service) to be modified easily in order to be replaced by another component, that may have been developed by a third party. In addition, the Web Services enable an application's complexity to be reduced as the developer can focus on a particular service independently of the rest of the application.

18.3 Documents provided by Bodet Software

Bodet Software provides:

- Detailed Web Services documentation. This documentation can be accessed on line on the Kelio server from the following url: http://localhost:8089/open/services (where localhost is the address of the Kelio application server). It may also be provided by your technical contact as HTML files independent of the Kelio application. The documentation lists all the Web Services provided by the Kelio application and the "WSDL" that correspond to the Web Services. The list of methods is provided for each Web Service, along with the input and output parameters for each Web Service method.
- Two development examples that use Kelio application Web Services may be provided to customers on request (example 1–Reading employee data, example 2–Writing absence files). These development examples are in Java language

18.4 Optional services provided by Bodet Software

After consulting the documentation and the examples, the customer is committed to producing their own interfaces from the elements provided. The provision of Web Services by Bodet Software does not imply that Bodet Software will provide the customer with assistance on using the Web Services or development.
An optional consulting service for using the Web Services may be offered by Bodet Software. This service will enable answers to be provided to functional questions and will provide advice on using Web Services according to the customer's requirements. In this case, the customer must provide Bodet Software with a set of specifications for the different exchanges to be put in place with a file on the data to be exchanged (flow diagram). Depending on the complexity of the exchanges and the level of advice to be provided, Bodet Software will draft a proposal to provide consulting time adapted to the customer's requirements. This service is limited to functional advice on how to use the Web Services and is in no way assistance for programming in the language chosen by the customer.

18.5 Web Service evolution

Bodet Software reserves the right to upgrade the Web Services with each change of software version. These evolutions are used to respond to the functional progress related to the version. These evolutions may be translated into WSDL modifications, the addition of new methods to existing services or even the addition of new Web Services. Bodet Software will not guarantee compatibility with applications developed by third parties.

19. BODET UPDATE

Bodet Software has integrated a proactive software update mechanism called Bodet Update into the Kelio solution.

This mechanism, which runs on the machine that hosts the Kelio server, consists in consulting an FTP server each day that is updated by the Bodet Software team to detect the availability of a new Kelio version.

To do so, the Kelio server must be able to exit to Internet to consult the public IP address 80.74.71.119 by TCP port 80.

If Bodet Update detects the presence of a new version it automatically downloads the sources of this new version into the Kelio server's Bodet\Open\Bodetupdate\downloads directory.

20. KELIO REPORT

Kelio Report is an optional module of the whole Kelio range, which offers will become your key tool for managing your human resources and will help you prepare your company balance sheet as a report.

Kelio Report interprets in real time data from the production database (not in the optional data warehouse - datamart).

Kelio Report is compatible with Office 2000, 2002/XP, 2003, 2007 et 2010.